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ABSTRACT

Observing the composing processes of students working over real time in naturalistic settings, two exploratory studies asked: (1) What skills and assumptions do freshman and advanced writers invoke when they are searching for information to be used in writing? (2) What strategies and goals do students bring to a typical writing-from-sources task like the research paper? and (3) How do particular classroom contexts influence student performance? The research paper was used as a vehicle. The first study observed the way eight freshman and eight advanced writers planned and searched for information, revealing two differing purposes: content-driven (a fact-finding mission) and issue-driven (arguing for a position). The second study examined how students perform the many tasks involved in writing research papers. Eight students at Carnegie-Mellon University, randomly selected from courses requiring research papers, kept a daily process log of all paper-related activities from the time they received the writing assignment to the time they finished writing. The resulting material (over 500 pages) revealed two strategies in use. Low-investment strategies centered around the rote reproduction of other authors' ideas for the teacher-as-examiner. High-investment strategies centered around the transformation of source material to produce original conclusions. The teacher's role in influencing these strategies was a powerful one: high-investment writing was fostered by providing intermediate feedback, focusing on high level goals, providing an audience other than the teacher, and getting writers started early. (Fourteen references conclude the study.) (SR)

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# Center for the Study of Writing

Technical Report No. 16

## HOW THE WRITING CONTEXT SHAPES COLLEGE STUDENTS' STRATEGIES FOR WRITING FROM SOURCES

Jennie Nelson
John R. Hayes

August, 1988

University of California, Berkeley
Carnegie Mellon University



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# How the Writing Context Shapes College Students' Strategies for Writing from Sources

By

Jennie Nelson and John R. Hayes
Carnegie Mellon

The most common college-level writing assignments that students encounter across the curriculum require them to incorporate facts and concepts from other texts into their own prose (Bridgeman & Carlson, 1985). Although much of the writing students are expected to do involves writing from sources, we know little about how students actually approach such tasks. What happens when students are asked, for example, to write a research paper on a particular aspect of Victorian literature? How do students interpret this assignment? What strategies and goals do they rely on to help them to choose a topic, locate and evaluate sources, select information, and finally organize and write a ten page paper? How do students orchestrate all of these tasks and decisions?

Clearly, assignments that require the use of multiple sources place sophisticated demands on students *and* pose particular problems for researchers who are interested in understanding how students complete such complex tasks. Researchers have attempted to study writing-from-sources tasks by providing students with source texts, asking them to incorporate these source materials in a written response, and then analyzing the resulting processes and products (Spivey, 1983; Kennedy, 1985). This type of research provides valuable insights about the range of strategies students use when performing particular tasks that require the use of multiple sources, but it is also limited in two important ways. First, by furnishing students with sources, researchers miss the chance to study how students locate and evaluate sources on their own. As writers ourselves, we know that the natural frustrations and revelations encountered in searching for information shape our thinking and writing. We need to know more about how students actually search for information to be used in writing. Second, by asking students to write under contrived conditions for the occasion of a research project alone, we miss the chance to examine how students interact with their teachers and with the rest of the educational environment while they are completing such assignments. Recent research has revealed that individual classroom contexts and educational settings in general have a powerful influence on how students define and approach writing assignments (Marshall, 1984; McCarthy, 1987; Ruth & Murphy, 1984; Sternglass & Pugh, 1986). We need to examine how particular classroom practices and students' assumptions about specific tasks like the research paper influence their research and writing strategies.

In an effort to learn more about how students search for information and orchestrate the many tasks involved in writing from sources, we conducted two exploratory studies. We chose to use the research paper as a vehicle to study writing from sources for two reasons. First, the research paper emphasizes decision-making on the writer's part, from selecting a focused topic and sources to developing an organizing structure and thesis; we were interested in learning how students manage all of these decisions. Second, an extensive survey has shown that the research paper is taught nationwide in 84% of the college freshman composition programs and in 40% of the advanced writing programs, but in spite of its well-documented status in English curriculums, it has been consistently ignored in studies of writing instruction (Ford & Perry, 1982).

Our aim was to begin to answer the following questions:

*What skills and assumptions do freshman and advanced writers invoke when they are searching for information to be used in writing?*

*What strategies and goals do students bring to a typical writing-from-sources task like the research paper?*

*How do particular classroom contexts influence student performance?*

In order to answer these questions, we chose to use a research method that would allow us to capture the complex processes of researchers and writers working over "real" time in naturalistic settings. To do this, we asked students to keep a record of their processes for completing assignments by writing regular entries in a "process log." In a recent article, Sternglass and Pugh (1986) argue convincingly that such retrospective journals can be an effective research tool. For our research, the process log proved to be an especially effective method for learning more about how students use the library, select and take notes from sources, and organize and compose a long paper, sometimes in an incredibly short amount of time. We also found that because the participants in both studies viewed the researcher as an impartial observer who was sincerely interested in learning about how they worked and not in passing judgment, they felt free to reveal practices and attitudes that they might not have been willing to reveal to their own teachers.

**Study One: Observations of students searching for information**

This first study was designed to explore the repertoire of skills that individual students bring to search tasks. We believed that by studying how students define and carry out the task of searching for information to write about, we would gain insights into how students define the larger task of writing a research paper. Specifically, the purpose of the first study was to compare the way freshman and advanced (upperclassmen and graduate students) writers planned to search and searched for information to be used for writing. The participants were eight freshmen and eight advanced writers who were selected at random from a variety of disciplines. Each participant received the following description of the research/writing assignment:

> You are enrolled in an upper division history course entitled "The History of Latin America." Each student must write a term paper of approximately ten pages typewritten (worth 50% of the course grade) on the relationship between the United States and a particular Latin American country. Your assigned topic is to research and write on some aspect of the relationship between the U.S. and Chile during the overthrow of President Allende in the early 1970's.

Students were then asked to think aloud about their initial plans for proceeding with the assignment. Their responses were tape-recorded and any notes that they made were photocopied. They were then asked to carry out the research they would need to do in order to write a first draft on the topic, and to keep a complete log of the research trail they followed. Students were given five days to complete their research and were paid for their participation.

As stated earlier, in order to facilitate comparison between the freshman and advanced writers, all participants were asked to research the same topic. But in order to ensure that students would have access to the same range of sources in the library, participants were told not to check out any sources, and were asked to photocopy material instead, using copy cards we provided. In addition to this precaution, we scheduled subjects so that no more than two students were performing their

library research at the same time. Participants were assured that the researcher was interested in their natural way of completing such tasks and they were encouraged to behave as if this were a normal assignment.

*Findings: Content-driven and Issue-driven Search Strategies*

The results of the study revealed that generally the two groups invoked very different goals and strategies for completing their search task. The most important difference between the two groups was in their initial representation of the task. Seven of the eight freshman students essentially set out on a fact-finding mission. Their aim was to find information about the assigned topic as efficiently as possible and this *content-driven* approach influenced their search strategies at every level. In contrast, the advanced writers and a single freshman were less concerned about finding content than they were with finding a specific issue or angle to guide their searches. They described their purpose in different ways: "to make a case; to argue for a position; to find a provocative or new approach." This *issue-driven* approach had a profound impact on their search strategies and goals. Students' behavior differed in three areas:

1) Initial plans for proceeding with the assignment;
2) Techniques for finding sources and limiting searches;
3) Criteria used for accepting or rejecting sources.

**Initial plans for proceeding: Content-driven Approach**

During the planning protocols, students pursuing the content-driven approach focused on describing where they would look for information on the topic as described in the assignment. They did not mention refining or limiting the topic even though the assignment (to write on *some aspect* of the relationship between the U.S. and Chile during Allende's overthrow) left room for individual interpretation. Some students also described how they would write the paper, using extremely efficient, low-cost strategies. For example, after finding her sources, one freshman said she would then write an outline directly from the sources, recording the appropriate page numbers on the outline. Then she would skip notetaking and writing a rough draft, and type her paper straight into the computer, by referring to pages in the sources as she wrote. She explained that this method was especially efficient because in some cases you "wouldn't hardly have to read the books" but could just skim individual pages for relevant information. She predicted that this entire process—from searching for sources in the library to typing the final paper—would take no more than two days to complete. Another student described her stream-lined technique: "I'd choose three comprehensive sources, read through the chapters on my topic, take notes from all the sources and compare them. Then I'd make an outline from the notes." In every case, students' plans centered on finding and assembling content.

**Initial plans for proceeding: Issue-driven Approach**

The students using the issue-driven approach described different initial plans depending on whether they had any background knowledge about the topic. While none of the subjects had any detailed knowledge about Allende's overthrow, several students had political views that influenced their response to the topic. One graduate student in Rhetoric who was also a Sister in a Catholic order and very concerned with social issues said that she would "redesign the assignment" to include her personal interest in the United States' policies in Central America. She decided to focus on three sources for information: the United States popular media, religious publications, and the *Congressional Quarterly*. At the end of her planning protocol she formulated her initial goal for the paper: "to trace the presence of interventionist policy at this point in the history of Chile and to show

how this policy is reflected in what's happening now with Nicaragua and El Salvador." Her knowledge and views about U.S. policy in this region helped her to find a focus for her research.

Students using the issue-driven approach who did not have much specific or general topic knowledge adjusted their search plans to fill in this missing knowledge. Several students explained that they would do broad background searches first to help them "formulate a hypothesis or thesis" to study in detail. After describing her plans for a broad search, which included talking to someone from Chile and reading about the political climate in surrounding countries, one graduate student said she would "look for trends, patterns, or threads" in Latin American history, and then embed her analysis into this larger picture.

Several students described how they could limit their approach by looking at one aspect of the topic. For example, one student listed "economics, politics, military concerns, foreign relations, and key figures" as possible aspects he could focus on. In each case, students wanted to find a specific issue or point of view to guide their research.

**Techniques for finding sources and limiting searches: Content-driven Approach**

Students using the content-driven approach relied on the keywords in the assignment as cues for searching for sources. Most students identified *Latin America, Chile, and Allende* as the key descriptors in the assignment. They then typed these headings into the library's on-line catalogue, usually starting with more general terms first. For example, one student typed in *Latin America* but found the titles too numerous and broad; he then tried *Chile* which yielded fifty books but none with titles that struck him as relevant; he tried *Allende* next and the computer listed six books; he then typed in *United States*, apparently looking for the "U.S, relations" part of the assignment, but when the computer listed 6,000 titles under that heading, he quickly decided to limit his search to the six titles under *Allende*.

Some students began their searches with encyclopedias, looking up *Chile* and *Allende* and using information about the specific dates of the overthrow to limit their on-line searches. Thus they could automatically reject any book or article written before 1972. Some students also used the *Readers Guide* and *Info Trac* indexes to periodical articles and relied on the same key words as search cues.

**Techniques for finding sources and limiting searches: Issue-driven Approach**

Students with some knowledge about the topic limited their searches by doing extensive planning before going to the library. For example, one graduate student in engineering wrote out his major hypothesis in question form, listed the kinds of information needed to answer it, wrote a brief outline of key questions and points, then used the outline to determine what sources would be most useful and relevant to his goals.

Students who had little background knowledge used extremely efficient search techniques to help them formulate a thesis or angle on the topic. Two graduate students and one senior skimmed periodical indexes such as *The New York Times* and *The Readers Guide* in order to get a brief synopsis of the major issues being discussed during the time of Allende's overthrow. One student noticed that the International Telephone and Telegraph Company was mentioned several times in the periodical listings and she pursued this connection in other sources, finally deciding that her paper would analyze and compare the various points of view concerning ITT's involvement in Allende's overthrow.

Students using the issue-driven approach also mined the endnotes and bibliographies of sources to find other references. One student explained that he relied especially on the bibliographies in scholarly publications for "expert" recommendations because he believed that he could trust the expertise and judgements of such writers. He noted that one way to determine the quality of references was to see who published the book; for example, a book published by Oxford press was considered a good source for other references.

**Criteria for accepting or rejecting sources: Content-driven Approach**

The implicit question that students using the content-driven approach seemed to ask when evaluating a possible source was *"How easily can information be extracted?"* One student explained her technique for determining this: skim the index for your topic; if information is spread out (sprinkled over several distant pages) then reject the book because you would have to read too much. She explained that you should try to find sources that have pockets or chunks of information that can be read and summarized easily. She and other students preferred more general, comprehensive books with condensed treatments of the topic.

Students limited themselves to only a few sources, basing their choices on how much the books' contents overlapped. Apparently overlapping content was interpreted as a sign of agreement among authors and hence correctness. One freshman explained that "using three sources is a good idea because the third one can settle any disagreements between the other two." He also said that he would list more than three books in his paper's bibliography (without actually examining them) because "it looks good." Students were not concerned about the quality of their sources, but looked above all for easily accessible information.

**Criteria for accepting or rejecting sources: Issue-driven Approach**

The issue-driven students used very different criteria to evaluate prospective sources than the content-driven students. Essentially, they evaluated sources rhetorically, asking *"Who wrote this, when, and for what purpose?"* One student chose to use a book because its author was Canadian and might offer a more objective viewpoint of U.S. involvement in Allende's overthrow. She also explained that you must "beware of *Time Magazine* and other popular journals because they are very subjective and the comic strips of news journals...more flash than substance." Another student read the preface to a source to determine the author's bias and goals. One student rejected a particular book because it was a first-person narrative and openly opinionated. On the other hand, several students purposely chose sources because of their biased points of view, hoping to gain insights about the causes and motives behind the overthrow. For example, one senior decided to use a book by the former United States ambassador to Chile because this official would present the "party line" on the events surrounding Allende's overthrow. Unlike the content-driven students, these students did not base their choices on how easily accessible information was but on how reliable and relevant the information was to their particular goals.

***Discussion***

Perhaps what is most striking about both the content-driven and issue-driven search strategies described above and summarized in the table below is how well-adapted they are for the particular tasks students seemed to define for themselves. If your goal is to assemble and reproduce what others have written on a topic, then search strategies that allow you to locate sources with easily plundered pockets of information are especially appropriate. In contrast, if your aim is to "argue for

a position" or "find a new approach" to a topic, then you'll need search strategies that allow you to zero in on issues and evaluate the relevance and validity of possible sources.

**STRATEGIES FOR SEARCHING FOR INFORMATION**

| | CONTENT DRIVEN | ISSUE DRIVEN |
|---|---|---|
| INITIAL PLANS | focused on finding information | focused on finding issue |
| FINDING SOURCES | used keywords in assignment to guide search | used issues to guide search |
| CRITERIA FOR ACCEPTING SOURCES | ease of access | quality; rhetorical relevance |

But why did students define their tasks so differently? In particular, what made the advanced writers and the single freshman set such different goals for themselves? While we can only speculate about the reasons behind these differences, the remarks of two participants provide interesting clues.

A senior in mechanical engineering said that her response to the assignment would depend on how much she was willing to invest in it. She explained that if she were a history or humanities major enrolled in the upper division history course described in the search task, she would write a paper in which she analyzed the different arguments or "truths" surrounding Allende's overthrow, saying that it would be interesting and challenging to evaluate the different points of view about the United States' involvement (this topic came from her preliminary library research). However, she explained that in reality she would probably choose to write on an easier topic because, after all, she was an engineer and history was just an elective.

For this easier paper she would "document" U.S. involvement and then "tack on some sort of analysis in the last paragraph." She explained that this paper could be composed quickly at the computer terminal by "just shoving in quotes" because "they support themselves." The more challenging paper, on the other hand, would require several drafts and would have to be written out in long-hand first, and direct quotations from the participants and spectators of Allende's overthrow would have to analyzed in detail. She explained that this harder paper would be "more fun" to write but that the "easier topic" would take less time away from her other courses. Thus, for this senior, defining this particular research task involved essentially defining her role as a writer in a specific context. As a history major enrolled in a history seminar she would invest the time and effort necessary to write an original analysis, but as an engineer, she would choose to use the sources she collected to construct a summary with a little analysis thrown in at the end.

We found similar concerns about the writer's role in the remarks of a graduate student in engineering and public policy who hoped to pursue a career in teaching. During his planning

sessions before he went to the library, he said, "I'll have to pick my own topic for this assignment. . . . I prefer to have a provocative or different approach rather than a generic term paper because I see myself as having to do that later—you know—publish or perish." Before going to the library, he looked over his notes and textbooks from a course he had taken a year before called *Issues in National Security Policy*, and used this material to arrive at a "basic premise" for the assignment and a list of evidence needed to support this premise. In his subsequent library research, he focused on finding sources that would provide this evidence.

Once again, we see the importance of the writer's role within the writing situation in determining how he approaches the assigned task. This student defined himself as a contributing member of an academic community, mentioning that he often sent drafts of working papers to colleagues in the field for their advice. He explained that his goal for this particular research task was to find a new approach and "make a case," and his issue-driven search strategies were well-suited for this goal.

No doubt, it should come as no surprise that the way a writer defines his role in a given writing situation plays a part in determining how he defines his writing task, although it may be a surprise to see just how important that role appears to be. But what determines how a writer defines his or her role? Do different teachers and classroom contexts influence students' strategies for defining and completing research writing tasks? We needed to observe students working in naturalistic settings to begin to answer these questions, and this was the purpose of our second study.

**Study Two: Naturalistic Observations of Students Writing Research Papers**

This second study was intended to examine how college students in natural school settings perform the many tasks involved in writing research papers. The participants were eight students selected at random from a variety of courses in the Arts, Sciences, and Humanities at Carnegie Mellon University that required research papers. Because teachers managed these research paper assignments differently, each of these courses provided a different context and set of constraints for students. Each of the participants, five freshmen, two juniors, and one senior, agreed to keep a process log of all work they did on their papers from the time they received the writing assignment to the time they finished writing. The logs were to cover all paper-related activities including reading, talking, thinking, library research, and writing. Once the student began working on the paper, a log entry was required every day, whether the student actually worked on the paper that day or not. Students were paid for their participation. The logs were checked at two to three day intervals throughout the study.

**Findings: Low-investment and High-investment Strategies and the Contexts that Encourage Their Use**

The eight students taking part in the study provided us with over 500 pages of material including log entries and copies of their notes, drafts and final papers. This material revealed very different processes in action. Some students were able to procrastinate until the last minute and then produce a paper using ingeniously efficient low-cost strategies similar to those described by some students in Study One. Other students worked much harder, relying on more high-cost, time-consuming strategies. While all eight of the participants did not fall neatly into this low-investment/high-investment dichotomy, they did seem to have very different notions of what their assignments required and chose their paths accordingly. What led some students to take the high-investment path and others the low-investment? A careful examination of representative cases provides insights about the nature of the different processes involved and the situations that might foster their use.

**Low-investment Strategies**

Students using the low-investment strategies displayed remarkably similar behavior in spite of their different ages, interests, and courses. Two students, a freshman and a senior, provide especially good examples. Ann, a freshman Drama major enrolled in the History of Drama, was required to write a 5-7 page paper about any aspect of the Eighteenth Century British theatre. Bill, a graduating senior in the Social Sciences, was enrolled in a seminar on Decision-making and required to choose his own subject for a 10-15 page seminar paper. In both cases, students were left to complete the assignment on their own, with no formal guidelines or intermediate feedback from teachers or classmates. To ease comparison among participants in the study, we have divided their activities as described in the log entries into the following four categories.

1) Choosing a topic and getting started.
2) Searching for information and taking notes.
3) Composing the paper.
4) Evaluating the task.

1) **Choosing a topic and getting started: Low-investment Responses**

ANN

For Ann, choosing a paper topic was quite painless. Ann literally "let her fingers do the walking"; she skimmed through six history books that included sections on Eighteenth Century British drama and chose her topic through an interesting process of elimination. One topic (the actor Garrick) was rejected because there was "too much information on him, so everyone else would want to do him" and "because we talked about him in class too much." A second topic that seemed to interest her especially was rejected because it was mentioned in only one of the six books she had haphazardly chosen, and, instead of searching for other possible sources, she concluded "Oh well, I guess I can't do him." Finally, she noticed a large section on mime in one book, quickly skimmed the others, and triumphantly wrote "BINGO, I found my topic." Ann revealed that she "had a basic format in mind" for her paper soon after choosing her topic, a format suggested by the treatment of mime in her six sources: "The first part of my paper would be a basic history of mime and its evolution; the second part would be about John Rich, the most important person in Eighteenth Century mime." She had no plan for the third part of the paper at this point.

BILL

Bill relied on his teacher to choose a topic for him, explaining "I have no idea for the paper; hope he does." After meeting with his professor, Bill decided to "do the paper on who uses data processing systems in business and why, plus ways to increase their usage." This topic conveniently suggested an organizational plan that helped Bill in later stages of his paper.
In both cases, the students chose topics of limited scope that provided them with a ready-made blue print for organizing and presenting material. They did not describe their topics as questions or issues but as content headings that suggested obvious sub-topics.

2) **Searching for information and taking notes: Low-investment Responses**

ANN

The next step for both students was to begin gathering information. Ann's search for relevant material was especially simple; she relied on the key words in her assignment, looking up "Theatre,

England: History" in the card catalogue and skimming books on the shelf under the call number listed for this area. She found six books that included a section on the Eighteenth Century in their table of contents and chose four of these books as her sources. Her choice of topic and all subsequent work depended on this limited and rather haphazard search. She never returned to the library to look for more material after this single search.

Ann predicted that she would "probably end up taking notes and writing the paper all in one step." After a painful two weeks of procrastination and complaints (and just one day before the paper was due), she unburied her four source books from the pile on her desk and began reading and taking notes. Once again, her techniques for completing these tasks were incredibly efficient. She used the books' indexes to find information on her topic, skimmed the pages, and took notes on material that was judged to be important either because it appeared in more than one book or because it had been mentioned in class lectures. Using these criteria to determine relevance, she worked through one source at a time, "paraphrasing from the source or just writing down fragments of information." She explained that "it would be kind of silly (as well as wasteful) to write each note as a separate entity"; instead she produced six pages of carefully crafted sentences and paragraphs, which she later easily transposed into text, thus condensing notetaking and text production into essentially one act. Not surprisingly, she found notetaking the most demanding task in writing a research paper.

BILL

Three days before his seminar paper was due, Bill went to the library where he used the *Social Science Index* to look up articles under "Information Systems" and "Decision Making." He found ten relevant articles and, using their bibliographies, compiled a list of six promising articles that he hoped to find in another library. Because of early procrastination and a misunderstanding about library holdings, Bill was unable to find time to track down the other six sources and decided to make do with what he had found on his single trip to the library. During this trip, which lasted four hours, he read all ten articles and took what he called "extensive notes," which consisted of six pages of brief summaries of each article's main points. Like Ann, Bill took notes one source at a time, working through each article page by page. Later he condensed these notes into a one-page summary, sat back and said "This is what I know; what can I write with it?" Thus, Bill used essentially the same streamlined system as Ann, basing decisions about the paper's content and organization on what his sources contained.

This content-driven approach conveniently reverses the stages that many writers go through. Instead of identifying key claims in an argument or issue and purposefully going in search of supporting evidence, writers can assemble the evidence first and then determine what claims it will support. By basing their choices on a preassembled list of facts, writers can avoid the headache of extended searches and guarantee that all their main points will be adequately supported. They can also begin writing without a purpose or goal beyond producing a paper for a grade.

### 3) Composing the paper: Low-investment Responses

ANN

For both Ann and Bill, writing the paper was one of the easiest tasks they faced, for it entailed merely assembling parts. Ann explained that

> writing the draft was the easiest part because I had the paper pretty much organized in my head and in the notes. All I had to do to write the draft was to paraphrase the notes, insert fragments into the right places, and put it in paragraph form.... I figure that if I paraphrase the book in my notes,

> and then paraphrase my notes, I am not plagiarizing. There is really no other way to write about factual information.

In fact, large sections of Ann's notes appear verbatim in her paper, and her "draft" is really a very neat, handwritten copy of the computer-typed paper with no sign of revisions. She managed to read, take notes, compose, and type a six page research paper in approximately ten hours (with plenty of recorded breaks for pizza and gripe sessions with friends). She ended her last log entry with a postscript: "The computer filename for this paper is *Extremely Boring*."

BILL

Bill spent approximately eight hours composing and revising his paper. Before he began writing, he used his summary sheet to plan the shape of his paper, dividing his notes into two sections labeled A and B. He then spent two hours writing a very detailed outline consisting of concise summaries of his source's key points with the corresponding page numbers in the margin. The information from each source was listed separately and in the same order as it appeared in the articles.

He wrote his draft in long-hand, every other line to allow room for changes. While his draft shows signs of revision at the sentence or word level, his finished paper does not deviate from the organizational scheme that was so painstakingly laid out in his outline. The paper was written in chunks, each chunk corresponding to a source text. Like Ann, he was able to complete his project quickly and efficiently; he spent less than three days or approximately twenty hours on the entire process of producing a twelve page seminar paper, from choosing a topic to typing the final copy.

4) **Evaluating the task: Low-investment Responses**

ANN AND BILL

Bill did not offer any evaluations of his task or resulting paper. However, he planned to postpone work on the project until the end of the term, warning the researcher not to expect any log entries until finals week. Both he and Ann seemed confident in their ability to produce long papers on short notice.

Ann, however, complained a great deal about her assignment, which she labeled "dumb busy work." Over half of her log entries were guilt-ridden explanations of why she had not worked on the paper and how much she hated writing research papers. Her definition of the writing task may reveal why she found it so distasteful:

> I don't know why I can never bring myself to write research papers until the last minute; it's not a difficult thing to do; in fact, it's rather easy. Maybe it's because it's boring. I don't mind reading the stuff, or looking it up either; I just hate writing it down. It's so damn tedious. I can never keep a good train of thought because it's not coming from me or my thoughts; it's coming from some book and all I'm doing is regurgitating information that the teacher already knows. So why bother? I know how to use the English language (better than most people), I know how to write, I know how to look up information, I'm not interested in any of the topics the teacher gives us, he's read everything there is to read in the library, so why the hell do we have to do this dumb paper when all it is is busy work!

Given this task definition, it is no wonder that Ann sarcastically labeled her paper "Extremely Boring." She sees the research paper assignment as nothing more than an exercise in correct

expression designed to test her skill in retelling information that her reader already knows. Even though she expended little effort producing her paper (for which she received an A-), she complained bitterly about the unchallenging and pointless nature of the work.

**High-investment Strategies**

Students who chose the high-investment path seemed to have different notions about their roles and the task of writing a research paper. While their behavior is not as homogenous as the low-investment students', they do share one feature. In each case their teachers intervened in one or more stages of the process, providing advice, guidelines, or requirements that affected how students completed the assignment. This manipulation of the writing situation differed substantially from the "hands off" approach that both Ann's and Bill's teachers chose and seemed to influence how students defined their tasks.

Catherine and Diane, two freshmen, provide excellent representative cases. Catherine, a science major enrolled in an introductory physics class, received her research paper assignment early in the term with the course syllabus. In addition to writing a ten- to fifteen-page paper on a topic chosen from a list prepared by their professor, students were also required to give a twenty-minute lecture on their topic one week before the paper was due. The lecture and paper were each worth one hundred points, the same value as a major course exam. Besides providing an extensive general reading list, the teacher gave personalized advice to each student by suggesting one or two references and listing key words that could be used to search for more information on the topic. The professor also provided an itemized list of the criteria on which papers would be judged and invited students to discuss their progress early in the term.

Diane, a freshman Humanities student enrolled in an introductory literature course, was required to write an eight- to ten-page paper combining research and literary interpretation. The teacher provided three topics for the *French Lieutenant's Woman*, a novel the entire class had read and discussed, but she encouraged students to select their own topics as well, subject to her approval. Throughout the course, students were expected to examine their own responses to literary texts through exploratory writing in the form of journal entries and short papers.

The teacher continued this emphasis by expecting students to combine research with personal interpretation and by basing their grades not only on the finished product but on the exploratory writing and drafts produced in the process. Students were required to follow a work schedule and show evidence of their progress by handing in exploratory research, drafts, and progress reports before the final paper was due. The teacher gave extensive feedback on drafts and allowed students two weeks to make revisions.

1) **Choosing a topic and getting started: High-investment Responses**

CATHERINE

Catherine's research paper topic, chosen from the prepared list, was the *Detection of Invisible Light and Inaudible Sound*. Her teacher gave her a typed list of key words and suggested that she start with the *Encyclopedia of Physics* and look in physics textbooks as well. Over a month before her paper was due, Catherine began thinking about her research project and started writing log entries. The first description of real work revealed that she was more concerned about the lecture than the paper. While in the library doing research for another assignment, she saw the *Journal of Biomedical Applications* and "decided to use some examples from there in the speech as *color*."

It is interesting to note that she is concerned with finding information for a particular purpose, to provide colorful and relevant examples for her audience.

DIANE

The day after she received her assignment, Diane began thinking about a topic. She decided to choose her own instead of taking one suggested by the teacher and talked to a friend who had completed the same course and assignment the semester before because she "thought his topic might help me come up with one of my own." Uninspired by his topic, which she found " a bit unfocused," she discussed the possiblity of doing a Freudian reading, one of the approaches suggested in class. Diane explained "that Freud's ideas on female sexuality offended my sensibilities; I thought about what Betty Friedan said about Freud in *The Feminine Mystique*, and it suddenly occurred to me to do a feminist reading." Unlike the low-investment students, Diane based her choice of a paper topic on her personal interests and experience.

2) **Searching for information and taking notes: High-investment Responses**

CATHERINE

Catherine began doing research over three weeks before her scheduled lecture. She relied on her professor's advice to begin her search, finding the encyclopedia he recommended and looking up entries for the four suggested keywords. She also used the keywords to create a quick outline for her talk "to give myself some limits in researching." This outline listed the kinds of information she needed: an explanation of invisible light and ultrasonics, the history and discovery of ultrasound, ultraviolet and infrared light, and their applications. Thus, Catherine determined what information she needed *before* she began her research, unlike the low-investment students who allowed their sources to determine the scope of their papers.

Besides setting limitations for her search, Catherine also made plans for later research. She checked the bibliographies of each source for useful cross references and, before leaving the library, jotted down plans for follow-up searches in conventional encyclopedias and textbooks. She did not hesitate to use sources that were handy when she was working at home: she used her physics textbook to find examples on acoustics and her high school biology book for an explanation of how the eye translates signals. Although Bill, the social science low-investment student, also made plans for additional research, procrastination left him no time to follow through.

Altogether, Catherine wrote eight pages of sketchy notes; the notes were divided into separate subjects, one for each keyword, and some subjects were broken into sections such as "detection" and "uses." Her notetaking system differed from the low-investment students' in two interesting ways: she took notes according to her own predetermined plan rather than proceeding page by page through each source at a time; her notes consisted of fragments of information and formulas instead of polished prose.

Catherine also revealed that she had different search-goals than the low-investment students. She explained that "a lot of the really technical 'inner workings' stuff I read so I'd understand it, but didn't take notes on." Clearly, her primary goal was to understand material and not just to transcribe or summarize it. She gauged her understanding by explaining her topic to her mother:

> I spent about ten minutes telling her what I'd set out to look for, the interesting parts of what I'd found so far, and how much more I needed. (Still need to find some kind of demonstration, work out

three diagrams and find out how ultrasonics are detected.) It was like a preliminary practice for the speech, and helped reassure me that I can indeed speak 'physics-eeze' without notes or an outline and still have it make sense.

The requirement to present a twenty-minute lecture seemed to play a large role in Catherine's search plans. In addition to her desire to sound knowledgeable on her own topic, she considered looking up information on the topic of the student scheduled to speak before her, explaining

> I looked for the first time at who is also speaking the day I am. He's doing the detection of particles and radiation, which struck me as a more general case of my topic; thought about including pieces of his lecture into mine, by going and looking it up myself. Then thought of the potential for boredom if the two talks overlapped and decided I ought to try to find him so we could check and try to coordinate things.

Later, Catherine designed an organizational plan for the speech "that would keep overlaps from being a problem" and decided not to meet with the other speaker after all.

Catherine returned to the library several times, reviewing her notes and outline to determine how much material she still needed. She always went to the library with a particular goal in mind, mostly to fill in missing examples or clarify concepts she was unsure about. On the morning before her lecture she described how she planned to complete her preparation: "Went to the Engineering and Science library to look up what needed to be clarified. Planned to re-scan the old sources for things that were fuzzy, use all the reference books for the missing items, and if necessary, go to the Humanities and Social Sciences library and check some basic encyclopedias." The following description of one search reveals once again that her main goal was to understand material:

> Still stuck on Infrasound. Went to the on-line catlogue, tried "infrasonics, infrasound, ultrasonics," then hit "ultrasound." Decided I had nothing to lose and went to the shelves of the appropriate call number, and started checking indexes and tables-of-contents for infrasound information. Scanned about twenty books that way, and by picking up a paragraph here and a page there, managed to piece together at least a sketchy picture of its nature. Jumbled together in brain and wrote down as one coherent thought in the conveniently blank spot on the outline.

The outline for her speech consisted of six pages of very sketchy notes, formulas, and instructions to herself. Since she had struggled from the beginning to gain a working knowledge of the concepts, she planned to speak largely from memory and to explain technical information in her own words.

DIANE

Four weeks before her paper was due Diane went to the library in search of works by Mary Daly and other feminists. She decided that "some broad background reading might be a good idea"—a goal that was completely absent in the search practices of writers using the low-investment strategies. In fact, Diane's search strategies reveal much more planning and goal-setting than the low-investment students'. On one of many trips to the library she explained that "I went to the library with several goals: to figure out a more specific goal for my paper, to find the articles from the Info-trac printout on feminist literary criticism, and to use the other humanities database (the larger one) to find more articles. I wrote out a series of questions first, to guide myself." Like Catherine, she used this set of questions to limit and focus her search and to set specific goals for her paper.

> Sample questions: How does Sarah [the novel's main character] act out contemporary feminist values (how not)?

> How is the "territorial" battle between Charles and Sarah symbolic or parallel to the struggle between women and a patriarchal society?

This sample from her list of six questions reveals that Diane's goal is to *interpret* the novel using information and insights gained through research and not to merely *reproduce* material from other sources.

Diane's notetaking strategies are substantially different from the low-investment students' as well. For the most part her notes consist of direct quotes from several authors with page numbers and keywords written in the margin. Interspersed throughout these quotations are Diane's responses, sometimes in the form of questions or evaluations such as "good quote." Notetaking did not seem to serve the same purpose for Diane as for the low-investment students. The interactive nature of her notes suggests that her aim was to stimulate thought rather than to assemble facts or create content. In fact, Diane described in one log entry how a particular essay "triggered a sort of insight" that helped refine her approach and became the key to her emerging thesis.

Unlike Ann and Bill, Diane continued to read and take notes after she had begun writing drafts. For her, searching for information, reading and notetaking clearly were not separate tasks to be completed one at a time, but interdependent and recursive features of a complex process.

### 3) Composing the paper: High-investment Responses

CATHERINE

Not surprisingly, Catherine's careful preparation for the lecture also prepared her to write the paper. She purposely chose to focus her efforts on the lecture first because she felt that it would help her write a better paper by giving her a chance "to correct anything left out." After she went twenty minutes over the allotted time while rehearsing the lecture, she was forced to edit out large sections of her speech notes. But she left the information in the outline, so that she could include it in the paper.

She made very specific plans for writing the paper:

> It will have the same content and outline as the speech, with the exception of the introduction and a slightly more involved/technical mode of explaining things, as my audience is no longer twenty-five restless teenagers but an assistant professor upon whom I wish to continue making a good impression.

Catherine had indeed made a good impression on her teacher. After her lecture, he told her that he had learned something new from the talk and asked her to write the footnotes for that section of the paper carefully. Catherine was pleased and chagrined, explaining "I'm honored that I was the only person who told him something new, but - drat - now I'm going to footnote this paper into the ground and I usually take a casual approach to such endeavors."

She followed her initial composing plans completely. First, she spent two to three hours in the library "fleshing out footnotes" and tracking down sources. Next she spent two hours "playing with sample introductions—decided first off that diving straight into the facts was too abrupt and horrible style." After writing several trial opening paragraphs, she decided to introduce the paper the same way she had introduced the speech—"straightforward, no frills." She used the outline from the lecture to compose, explaining that

> having had to talk and sound intelligent for twenty minutes with just that in front of me, I had most of the appropriate phrases lodged firmly in the mind. . . . The stuff that was written came about 85% from memory of the speech, 15% more formal transitions, etc. since a paper is more formal than a lecture.

She composed her draft at the computer, inserting footnotes and rewording a few sentences after writing the entire draft over a period of three days. Given the amount of research and preparation Catherine completed for her lecture, it is not surprising that she had little trouble composing her paper and spent little time revising. Prior to her lecture she made substantial revisions in her outline, adding and deleting material, and clarifying key concepts. The final paper reflected this work. Her teacher gave her high marks for "knowledge of sources and literature, understanding of basic concepts, extensive treatment of subject, and originality of ideas."

DIANE

Diane began producing text in the form of "exploratory writing" early in her research. This informal writing traces the evolution of her thesis and, while very little of it appears verbatim in later drafts of her paper, the ideas are clearly present. She handed in the exploratory writing and was excused from the requirement to turn in a complete draft for review by the teacher because her professor correctly trusted her to write drafts and revise on her own.

Diane produced her draft in pieces, reading, refining ideas, and then writing a few paragraphs at a time. For example, she wrote her introductory paragraph after a period of reading and notetaking had confirmed her critical approach:

> It became more and more apparent as I read that Sarah's inconsistent, enigmatic behavior is much more explainable in terms of Victorian concepts of womanhood and how they apply to feminism than in terms of modern feminist ideals alone. I remembered reading in a book review that feminist criticism is often twofold like that (a historical perspective and a contemporary perspective). It seems that that approach will work well here.

After writing the introduction, she made more specific research plans and returned to the library "to get a handle on what feminist criticism is in general." This reading led to more writing, including a revision of the introduction (which she ended up rewriting four times). Diane's rough draft, written in long-hand, is full of changes, notes to herself, and plans for future writing. She used the writing process for the same purpose as reading and notetaking—to explore and discover ideas.

This exploratory process led to many revisions.

> I worked on my draft more, but I ran into some big problems with my thesis. There just isn't that much support for seeing Sarah as retreating into myth. I am going to try to reformulate my thesis to make it have more to do with Sarah's ways of creating islands for herself. . . . I hope I won't have to throw away everything I've written.

Diane did end up throwing away large portions of this early draft, but only after she had clearly diagnosed its problems and formulated new plans for the next draft.

> I think my major problem with my first attempt at a draft was that I was too caught up in all the information I had found through research and I wasn't concentrating enough on interpreting *The French Lieutenant's Woman*. I went back and read several sections of the novel and took some notes, and then I made a list of major points I thought related well to my research. I made a really rough outline. . . . My thesis is now quite different.

After this breakthrough, Diane continued to compose her paper in stages, usually writing two or three pages a day. She ended each section of draft with questions or plans for later work: "Why is the first ending silly and the second consistent? Recap why Sarah is like a modern feminist; mention that she is still an enigma." Diane's recursive process of evaluation and planning enabled her to compose a coherent eleven-page paper over a period of severals days. She found this process to be effective, reporting that "the writing went quite smoothly after I changed my thesis."

### 4) Evaluating the task: High-investment Responses

CATHERINE AND DIANE

The high-investment students' evaluations of their tasks are less overt than the low-investment students'. While Ann and others complained openly about their assignments, the high-investment students seemed too preoccupied with their work to stop and assess the task in general.

They did assess their own progress, however, invoking goals and standards that were not apparent in the low-investment students' behavior. Catherine mentioned her two audiences often, and hoped to impress and inform both her classmates and her professor. This goal led to important sub-goals, such as her desire to gain a working knowledge of her topic and to provide clear, interesting explanations and examples. At every stage in her research project, Diane set goals and used them to evaluate her progress. This goal-oriented, planful behavior is completely missing in the processes of the low-investment students.

Another interesting feature of the high-investment writers was their eagerness to discuss their topics and progress with others. Both Catherine and Diane shared their work with friends or family members, revealing a personal involvement and satisfaction not apparent in the low-investment students.

#### *Discussion*

Clearly, the low-investment and high-investment students had very different notions about what their assignments required and these notions affected their strategies for completing work at every stage, as the summary in the table on page 17 reveals.

Ann, the drama student, described the research paper as "dumb busy work" because "it's coming from some book and all I'm doing is regurgitating information that the teacher already knows." The low-investment students in Study Two and the content-driven students in Study One seemed to assume that the aim of the assignment was to test their ability to assemble and reproduce information for the teacher-as-examiner.

Apparently this assumption is a common one. Schwegler and Shamoon (1982) interviewed college students about why they wrote research papers and received very similar explanations. They found that

> students generally view the research paper as informative in aim, not argumentative, much less analytical; as factual rather than interpretive; . . . as an exercise in information gathering, not an act of discovery; the audience is assumed to be a professor who already knows about the subject. . . (p. 820)

## STRATEGIES FOR WRITING FROM SOURCES

| | LOW INVESTMENT | HIGH INVESTMENT |
|---|---|---|
| CHOOSING A TOPIC | a content category that is easy to write about | an issue of personal interest |
| GETTING STARTED | 2-3 days before paper is due | 3-4 weeks before paper is due |
| SEARCHING FOR INFO AND TAKING NOTES | 1 library visit; keyword search; detailed notes to be used in paper | many library visits; issue guided search; notes to stimulate thought |
| COMPOSING THE PAPER | assemble blocks of notes and paraphrase them; local revision only | exploratory drafts; global revision at conceptual and textual levels |
| EVALUATING THE TASK | negative | positive |

In contrast, Schwegler and Shamoon found that teachers not only view the research paper as "analytical and interpretive" in aim, but see it

> as a means to accomplish one of the primary goals of college instruction: to get students to think in the same critical, analytical, inquiring mode as instructors do—like a literary critic, a sociologist, an art historian, or a chemist. (p. 820-21)

Clearly, these two very different views about the aims of the research paper would lead to very different processes and products. In the first case students would set out to *reproduce* information found in sources, and in the second they would *transform* source material to produce original syntheses or conclusions. Scardamalia and Berieter (in press) propose two models for knowledge-use in student writing that can shed some light on these different processes: *knowledge-telling* and *knowledge-transforming*. They describe knowledge-telling as an efficient but dead-end strategy

developed to meet the demands of many school writing tasks that allow writers to "suspend the usual purposefulness of discourse" (Bereiter and Scardamalia, 1985, p. 76). Knowledge-telling is a "sort of no-frills system for digging out usable content and getting it down on paper as efficiently as possible" (p.76). We see evidence of this system in action in the efficient content-driven search strategies used by freshmen in Study One. With this system, Bereiter and Scardamalia contend that students can generate texts quickly and fairly effortlessly, which is exactly what the low-investment students in Study Two were able to do. Both Ann and Bill set out to assemble and *reproduce* established knowledge as efficiently as possible. Their streamlined processes and low-investment strategies were well-suited for this goal.

Unlike the knowledge-telling strategy, Scardamalia and Bereiter claim that knowledge-transforming requires careful analysis of the writer's purpose and the audience's needs, and the generation of appropriate goals and constraints. Rather than simply reproducing content from memory or a source text, the writer must constantly test new subject matter, choosing to accept or reject it based on how well it meets the requirements of a continuously evolving set of goals. Scardamalia and Berieter contend that this frequent testing leads to "the continual revision and rethinking that mature writers go through in a serious piece of writing" (in press). The planful, goal-oriented behavior of the high-investment students in Study Two clearly matches this knowledge-transforming model. Catherine and Diane set out to *transform* the established knowledge found in sources into original ideas or structures. Their recursive, complex processes and goal-oriented strategies (which included issue-driven search strategies) helped them achieve this goal.

But what led these students to define such different goals for themselves? While the factors influencing task definition are numerous and complex, these case studies reveal that *teachers play a powerful role in determining how students interpret and respond to assignments*. In each case, students performed the low-investment task when their teachers did not structure the writing situation beyond assigning a topic and a due date. When teachers did structure the context in ways that included providing advice, guidelines, peer audiences, and process requirements, students responded accordingly and, once again in every case, ended up employing high-investment strategies. The following example reveals just how powerful the teacher's role can be.

ERIC

Eric, a freshman enrolled in the same literature class as Diane, spent three weeks before the rough draft was due struggling to find a topic and procrastinating. His teacher finally helped him come up with a general topic—an analysis of what makes a particular comic writer funny—but he continued to put off choosing what author he would analyze, explaining that "I think about going to the library and looking up stuff, but, hey, I'm too lethargic." Eric finally did go to the library, browsed through books on satire and humor and jotted down some quotations, but did not settle on a specific topic until three days before the draft was due and did not begin writing his draft until the night before it was due, composing it in one sitting between 10 p.m. and 4 a.m. Obviously, Eric relied on the low-investment strategies to produce his rough draft.

However, Eric's strategies and criteria for evaluating his work changed dramatically after his teacher returned his rough draft. "I got the paper back and immediately thought 'Great, she figured out that I didn't have a thesis, yey!'" He explained that "when I wrote my rough draft, I didn't have a thesis.... There was no organization in the rough draft... it was just a piece of expository text." This "expository text" consisted of individual quotations about the elements of satire coupled with examples from Berke Breathed's comics. Eric's system for choosing which source's ideas to include in his draft was straightforward, if a bit egocentric: "When I was psyched and agreed totally with what was being said by the person writing it, I used it.... Simply, it's read—get

psyched—write notes—use in paper." Not surprisingly, this system produced a loosely connected summary of several experts' opinions and little critical analysis. But once Eric began revising the draft into an interpretation, he decided that much of this information was irrelevant to his new goal, which was to explore why some people are entertained and others offended by certain kinds of humor. He could no longer include whatever struck his fancy, but instead looked for ideas that supported his interpretation and thesis. Using these new goal-oriented strategies, Eric produced a revised paper that bears little resemblance to the rough draft and earned him a B.

Without his teacher's comments and the requirement to revise his paper, Eric would have been satisfied with producing a paper with no thesis or organizational plan. The fact that he openly acknowledged that his first draft lacked substance is particularly interesting because it suggests that some students may automatically or purposely choose limited task definitions and goals in certain writing contexts. In fact, there is evidence that supports this conclusion. After conducting an extensive study of the contexts in which high school students learn to write, Applebee (1984) and his colleagues found that individual classrooms and teachers have a powerful impact on how students approach writing tasks. He concluded that most teachers failed in their attempts to make writing a meaningful activity that promoted learning and student involvement. However, in the few cases where writing experiences were effective, teachers and students played less traditional roles. Successful teachers provided real purposes for writing and encouraged students to integrate and use new knowledge rather than expecting them to reproduce the teacher's or textbook's point of view. Applebee concludes that "the nature of the communicative situation . . . [is] the fundamental factor shaping the success of instruction" (p.171). When the teacher plays the role of interested collaborator and facilitator, students report "a new found involvement and control in exploring their own ideas and seeing them grow" (p.171). We see evidence of such involvement and control in the responses of the high-investment students in Study Two.

It is interesting to speculate at this point about why the advanced writers in the first study—which presented students with the same kind of truncated writing situation that led to low-investment goals and writing strategies in Study Two—did not appear to require the stimulus or support of a structured writing situation to put more than minimal effort into their research tasks. Could it be that regular exposure to writing situations that require high-investment responses (like those described by the engineering graduate student earlier) lead to the internalization of high-investment goals and strategies? If so, it may be that the range and quality of the writing contexts our students are exposed to are key factors in aiding their development as writers, especially as academic writers. But what features of the particular "communicative situations" or classroom contexts in our study encouraged students' high-investment responses? Because of the exploratory nature of these studies, we cannot draw firm conclusions as yet about what features were most influential, but we can offer informed speculations. We believe that there are at least four features of the high-investment writing situations that should be considered as candidates.

1. *Providing intermediate feedback.* The high-investment writing situations allowed the teacher opportunities to provide feedback to writers on their drafts, talks, or journals. Such feedback can provide the writers with ideas for a topic or topic development, with cues for information search, or perhaps most important, with more ambitious standards to strive toward. In Eric's case, cited earlier, the teacher's insistence on high standards encouraged Eric to transform a pointless summary into an original analysis.

2. *Focusing on high-level goals.* Students seemed to rely on low-investment strategies when their goal was to *reproduce* source material for the teacher-as-examiner. Hence, in order to encourage students to give up this efficient (and no doubt well-rehearsed) strategy, teachers may have to give up their roles as "examiners" who are looking only for errors in form and content and must concentrate instead on high-level goals. For instance, Diane's literature instructor used informal

log entries, response statements, and drafts to set up a dialogue between her and the students. She did not play the role of examiner looking for the "right" interpretation, but instead collaborated with students, helping them to use their research material to form their own original interpretations. Teachers who convince students that they value original thinking and provide assignments that have a purpose beyond reproducing established knowledge seem to elicit high-investment responses (see Herrington, 1986; Marshall, 1984; McCarthy, 1987). In contrast, Ann, the drama student who received a *truncated* assignment, assumed that her teacher was already familiar with her research material and that he would evaluate it as an examiner would. It is not surprising that she limited her overall goal to the faithful regurgitation of source material.

3. *Providing an audience other than the teacher*. In Catherine's physics class, the requirement to present a twenty-minute lecture to classmates provided students with a real purpose for their research (to teach their fellow classmates), and an audience other than the teacher. As a result, students had to consider the special nature of their audience and to adapt the technical information from their sources to meet the needs of their uninformed listeners.

In Catherine's case, her classmates were certainly an important audience to her. The need to consider the student audience for her lecture had a major impact on the way she researched the topic. Indeed, she seemed to focus more on her lecture than on her paper. We should not forget, though, that Catherine continued to regard her teacher as an important audience as well.

4. *Getting writers started early*. All of the high-investment writing situations also required the writers to do something that might force them to get started early on their papers. The requirement to submit a draft or to give a talk a few weeks before the paper was due would certainly tend to get the writers working early and might well lead writers to put more time on task than expended by the low-investment writers. How early the writer starts could influence many aspects of the writing process. After all, writers who have left themselves only twelve to eighteen hours to write a ten-page paper simply cannot spend much time in topic choice, information search, or careful integration of ideas.

Each of these four features of the effective writing situations offer plausible explanations for students' high-investment responses. While we cannot draw firm conclusions about which of these features is most effective without further research, it is clear that teachers play a powerful role in determining how students interpret and respond to assignments that involve writing from sources. As teachers and researchers we need to learn more about what makes such assignments worthy of high-investment responses or just tedious busy-work.

## Conclusions

The findings of these two exploratory studies are disturbing and promising. They are disturbing because they reveal that students have an extensive set of very refined, dead-end strategies for writing from sources, strategies that include one-shot library research, the plundering of sources for easily extracted information, and rote reproduction of other authors' ideas. These strategies appear to be tailor-made for writing to the teacher-as-examiner and are so well-learned and ingrained that some students seem to use them as a sort of "standard operating procedure" when they are confronted with an assignment that requires the use of multiple sources. Perhaps what is even more disturbing is that students are rewarded for using these low-investment strategies. (Do not forget that Ann received an A- on her paper.) As teachers we must ask ourselves what kinds of intellectual processes we want our student to engage in, for example, when we ask them to write research papers. Do we really want them to "think in the same critical, analytical, inquiring mode" (Schwegler & Shamoon, 1982, p. 821) as we do? Or are we more interested in testing their ability

to look up information and produce "correct" academic writing, as Ann so angrily and astutely pointed out?

If we do want students to think like a literary critic or a physicist, it may not be fair or realistic to expect them to be able to without the same kind of intellectual and community support that we rely on when we are writing research papers. Schwegler and Shamoon found that for teachers, research "projects often arise from the concern of a community of scholars. . . . The community also forms the intended audience for research papers, and its expectations help guide choice of topics and writing strategies" (p.820). Clearly, teachers write in a context that not only provides clear expectations, criteria, and constraints, but an eager and interested audience, one that expects original insights and contributions. Conversely, students find the aims of the research paper similar to those of many school-sponsored tasks: to provide proof of learning and demonstrate skill in producing correct prose. Their intended audience is normally a teacher who does not expect to learn anything from students' writing but instead will evaluate it as an examiner would, looking for errors in form and content, and ignoring the writers' ideas and interpretations. Given this writing context, it is not surprising that students have developed content-driven and low-investment strategies for writing from sources.

We said that the findings of these two studies are promising too—promising because they suggest that when students are provided with contexts that warrant critical, analytical approaches, they are capable of producing high-investment responses and using strategies that resemble those of more experienced writers. We do not mean to suggest, however, that all we need to do is to provide challenging contexts and leave students alone. Teachers in Study Two who created writing situations worthy of high-investment responses also provided different kinds of instructional support for their students. For example, Catherine's physics professor wanted students to explore and comprehend information on current and often very technical topics. To help students, he gave each one a personalized list of accessible references, and, in some cases, an additional list of key words that could be used to search for more information. The requirement to present a lecture provided students with a forum in which to test their ability to comprehend and discuss technical information with non-experts before they began writing their papers. This peer audience also provided a "community of concerned scholars" whose expectations helped guide choice of topics, sources, and composing strategies.

Similarly, Diane's teacher provided instructional support through the use of journals and drafts, which gave students a safe place to explore and test their ideas, and, in Eric's case, to identify problems and remedy them. The teacher gave students extensive feedback, mostly in the form of questions, guiding them through their task while leaving them room to formulate their own goals and interpretations. Clearly, if we expect students to transform ideas and information from sources into original syntheses and conclusions, we must provide support for their efforts, especially since such expectations and goals may be new to many students.

Finally, we believe that our findings are promising not only for teachers but for researchers as well. The two studies we have described reveal the value of studying the composing processes of students working over real time in naturalistic settings. It is evident that we need to take the writing situation into account when we examine students' responses to typical academic tasks like the research paper. Such practice-sensitive research should lead to a richer understanding of our students' composing processes and the contexts that encourage their growth.

## References


Applebee, A.N. (1984). *Contexts for learning to write: Studies of secondary school instruction.* Norwood, NJ: Ablex.

Bereiter, C., & Scardamalia, M. (1985). Cognitive coping strategies and the problem of 'inert knowledge.' In J.W. Segal et al. (Eds.), *Thinking and learning skills* (Vol. 2): *Research and open questions*. Hillsdale, NJ: Lawrence Erlbaum.

Bridgeman, B., & Carlson, S.B. (1985). Survey of academic writing tasks. *Written Communication, 2,* 247-280.

Ford, J.E., & Perry, D.R. (1982). Research paper instruction in the undergraduate writing program. *College English, 44,* 825-831.

Herrington, A. (1985). Writing in academic settings: A study of the contexts for writing in two college chemical engineering courses. *Research in the Teaching of English, 19,* 331-359.

Kennedy, M.L. (1985). The composing process of college students writing from sources. *Written Communication, 2,* 434-456.

Langer, J.A., & Applebee, A.N. (1984). Language, learning, and interaction: A framework for improving the teaching of writing. In A.N. Applebee (Ed.), *Contexts for learning to write: Studies of secondary school instruction.* Norwood, NJ: Ablex.

McCarthy, L. (1987). A stranger in strange lands: A college student writing across the curriculum. *Research in the teaching of English, 21,* 233-265.

Marshall, J.D. (1984). Process and product: Case studies of writing in two content areas. In A.N. Applebee (Ed.), *Contexts for learning to write.* Norwood, NJ: Ablex.

Ruth, L., & Murphy,S.(1984). Designing topics for writing assessment: Problem of meaning. *College Composition and Communication, 35,* 410-422.

Scardamalia, M., & Bereiter,C. (in press). Knowledge telling and knowledge transforming in written composition. In S. Rosenberg (Ed.), *Advances in applied psycholinguistics* (Vol. 1). New York: Cambridge University Press.

Schwegler, R.A., & Shamoon, L.K. (1982). The aims and process of the research paper. *College English, 44,* 817-824.

Spivey, N.N. (1983). *Discourse synthesis: Constructing texts in reading and writing.* Austin, TX: University of Texas Press.

Sternglass, M.S., & Pugh, S.L. (1986). Retrospective accounts of language and learning processes. *Written Communication, 3,* 297-323.



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